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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,259	12/21/2005	Jackie Papkoff	DEX0491US.NP	9408
32800	7590	10/10/2007	EXAMINER	
LICATA & TYRRELL P.C.			NATARAJAN, MEERA	
66 E. MAIN STREET			ART UNIT	
MARLTON, NJ 08053			PAPER NUMBER	
			1643	
			NOTIFICATION DATE	
			DELIVERY MODE	
			10/10/2007	
			ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

poreilly@licataandtyrrell.com

Office Action Summary	Application No. 10/562,259	Applicant(s) PAPKOFF ET AL.	
	Examiner Meera Natarajan	Art Unit 1643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6, 8, 10, 16, 19, 20, 22, 23, 30, 31, 35, 37, 39, 47 and 61-63 is/are pending in the application.
- 4a) Of the above claim(s) 30, 31, 35, 37, 39, 47 and 61-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 8, 10, 16, 19, 20, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>03/10/2006 and 02/21/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I and species election "cytotoxic agents", "toxins", and "ovarian cancer" in the reply filed on 08/19/2007 is acknowledged. The traversal is on the ground(s) that the reference Antalis et al. recited in the restriction requirement does not teach all the elements of Claim 1. This is not found persuasive because as stated in the restriction requirement Antalis et al. teach antibodies directed to testisin, also known as Pro104. Antalis et al. also discloses methods of use for the antibodies involving in vivo therapeutic uses for testicular cancer and fertility/infertility disorders (see column 15, last paragraph and column 18 paragraph 4). The requirement is still deemed proper and is therefore made FINAL.
2. Claims 30, 31, 35, 37, 39, 47, and 61-63 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 08/19/2007.
3. Claims 1-3, 6, 8, 10, 16, 19, 20, 22 and 23 will be examined on the merits.

Specification

4. The disclosure is objected to because of the following informalities: several trademarks are denoted on p.24 of the specification. Appropriate correction is required.
5. The use of the trademarks has been noted in this application on p.24. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 6, 19 and 23 drawn to antibodies produced by the following hybridomas; Pro104.C25.1, Pro104.D9.1 and Pro104.K81.15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
7. The claims 6, 19 and 23 are rejected under 35 U.S.C. § 112, first paragraph, because the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention, because the specification does not provide evidence that the claimed biological materials are (1) known and readily available to the public; (2) reproducible from the written description.
8. It is unclear if a cell line which produces an antibody having the exact chemical identity of the Pro104 antibody produced by hybridomas Pro104.C25.1, Pro104.D9.1 and Pro104.K81.15 is known and publicly available, or can be reproducibly isolated

without undue experimentation. Therefore, a suitable deposit for patent purposes is suggested. Without a publicly available deposit of the above cell line, one of ordinary skill in the art could not be assured of the ability to practice the invention as claimed.

Exact replication of: (1) the claimed cell line; (2) a cell line which produces the chemically and functionally distinct antibody claimed; and/or (3) the claimed antibody's amino acid or nucleic acid sequence is an unpredictable event.

9. For example, very different V_H chains (about 50% homologous) can combine with the same V_K chain to produce antibody-binding sites with nearly the same size, shape, antigen specificity, and affinity. A similar phenomenon can also occur when different V_H sequences combine with different V_K sequences to produce antibodies with very similar properties. The results indicate that divergent variable region sequences, both in and out of the complementarity-determining regions, can be folded to form similar binding site contours, which result in similar immunochemical characteristics. [FUNDAMENTAL IMMUNOLOGY 242 (William E. Paul, M.D. ed., 3d ed. 1993)]. Therefore, it would require undue experimentation to reproduce the claimed antibody species. The specification discloses on p.148-149 three hybridomas (PTA-6076, 6077 and 6078) deposited after the effective filing date of the instant application. Deposit of these three hybridomas along with all the required assurances would satisfy the enablement requirements of 35 U.S.C. § 112, first paragraph. See, 37 C.F.R. 1.801-1.809.

10. The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an adequate written description of the invention and failing to provide an enabling disclosure without complete evidence either that the claimed biological

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materials are known and readily available to the public or complete evidence of the deposit of the biological materials.

11. The specification lacks complete deposit information for the deposit of hybridomas Pro104.C25.1, Pro104.D9.1 and Pro104.K81.15. It is not clear that the antibody produced by the above hybridomas possessing the identical properties of the claimed Pro104 antibody are known and publicly available or can be reproducibly isolated from nature without undue experimentation.

12. Exact replication of a cell line is an unpredictable event. Although applicant has provided a written description of a method for selecting the claimed hybridoma cell lines and monoclonal antibodies, this method will not necessarily reproduce antibodies and hybridomas which are chemically and structurally identical to those claimed. It is unclear that one of skill in the art could derive a monoclonal antibody and hybridoma identical to those claimed. Undue experimentation would be required to screen all of the possible antibody and hybridoma species to obtain the claimed antibodies and hybridomas.

13. Because one of ordinary skill in the art could not be assured of the ability to practice the invention as claimed in the absence of the availability of the claimed antibody, a suitable deposit of hybridomas Pro104.C25.1, Pro104.D9.1 and Pro104.K81.15 for patent purposes, evidence of public availability of the claimed antibody or evidence of the reproducibility without undue experimentation of the claimed antibody, is required.

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14. Applicant's referral to the deposit of hybridomas Pro104.C25.1, Pro104.D9.1 and Pro104.K81.15 as recited on pages 148-149 of the specification is an insufficient assurance that the required deposit has been made and all the conditions of 37 CFR 1.801-1.809 met. The deposit of hybridomas Pro104.C25.1, Pro104.D9.1 and Pro104.K81.15 were made after the effective filing date of the instant application.

15. If the deposit is made under the provisions of the Budapest Treaty, filing of an affidavit or declaration by applicant or assignees or a statement by an attorney of record who has authority and control over the conditions of deposit over his or her signature and registration number stating that the deposit of hybridomas Pro104.C25.1, Pro104.D9.1 and Pro104.K81.15 has been accepted by an International Depository Authority under the provisions of the Budapest Treaty and that all restrictions upon public access to the deposited material will be irrevocably removed upon the grant of a patent on this application. This requirement is necessary when deposits are made under the provisions of the Budapest Treaty as the Treaty leaves this specific matter to the discretion of each State.

16. If the deposit is not made under the provisions of the Budapest Treaty, then in order to certify that the deposits comply with the criteria set forth in 37 CFR 1.801-1.809 regarding availability and permanency of deposits, assurance of compliance is required. Such assurance may be in the form of an affidavit or declaration by applicants or assignees or in the form of a statement by an attorney of record who has the authority and control over the conditions of deposit over his or her signature and registration number averring:

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(a) during the pendency of this application, access to the deposits will be afforded to the Commissioner upon request:

(b) all restrictions upon the availability to the public of the deposited biological material will be irrevocably removed upon the granting of a patent on this application:

(c) the deposits will be maintained in a public depository for a period of at least thirty years from the date of deposit or for the enforceable life of the patent or for a period of five years after the date of the most recent request for the furnishing of a sample of the deposited biological material, whichever is longest; and

(d) the deposits will be replaced if they should become nonviable or non-replicable.

Amendment of the specification to recite the date of deposit and the complete name and address of the depository is required. As an additional means for completing the record, applicant may submit a copy of the contract with the depository for deposit and maintenance of each deposit.

If a deposit is made after the effective filing date of the application for patent in the United States, a verified statement is required from a person in a position to corroborate that the biological material described in the specification as filed is the same as that deposited in the depository, stating that the deposited material is identical to the biological material described in the specification and was in the applicant's possession at the time the application was filed.

Applicant's attention is directed to In re Lundak, 773 F.2d. 1216, 227 USPQ 90 (CAFC 1985) and 37 CFR 1.801-1.809 for further information concerning deposit practice.

Claim Rejections - 35 USC § 102

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. Claims 1, 3, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Antalis et al. (US Patent 6479274).

19. The Claims are drawn to a monoclonal antibody which binds Pro104 (also known as testisin as disclosed throughout the specification) on a mammalian cancer cell in vivo.

20. Antalis et al. teach antibodies that bind to testisin, also known as Pro104, and methods of use for the antibodies involving in vivo therapeutic uses for testicular cancer and fertility/infertility disorders (see column 15, last paragraph and column 18 paragraph 4). Therefore the reference teaches the limitations of Claims 1, 3, and 16.

21. Claims 1, 3, 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bandman et al. (US Patent 6203979).

22. The Claims are drawn to a chimeric monoclonal antibody which binds Pro104 (also known as testisin as disclosed throughout the specification) on an ovarian cancer cell in vivo.

23. Bandman et al. teach the sequence SEQ ID NO:3 wherein amino acids 1-314 are identical to amino acids 1-314 of Pro-104 sequence disclosed in the instant application

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recited as SEQ ID NO: 3 (total of 340 amino acids) (see attached sequences). The antibodies taught by Bandman et al. would comprise antibodies having epitopes that would bind to amino acids 1-314 of SEQ ID NO:3 of the instant application. Bandman et al. also teaches method of producing antibodies, including monoclonal, polyclonal or chimeric (see column 28), and in vivo use of said antibodies in the diagnosis, treatment, and prevention of cell proliferative disorders and cancers including ovarian (see column 26 line 59 through column 27 line 7). The antibodies taught by Bandman et al. are directed to inhibit and/or regulate the activity of human protease molecules. Bandman et al. disclose human protease molecules play a role in such activities as cell growth, differentiation, and apoptosis. Bandman et al. disclose that increases in specific protease levels are correlated with increased malignant properties of tumor cells (see column 3 lines 47-51).

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

26. Claims 1-3, 8, 10, 16, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bandman et al. (US Patent 6203979) in view of Queen et al. (US Patent 6180370).

27. The claims are drawn to an isolated Pro104 antibody that binds to Pro104 on a mammalian cell in vivo wherein said antibody is a monoclonal, chimeric or humanized antibody, and conjugated to a toxin and inhibits the growth of ovarian cancer cells and a cell that produces said antibody.

28. The teachings of Bandman et al. are presented in the 102(b) rejection set forth above. Bandman et al. does not teach humanized antibodies conjugated to toxins which become internalized upon binding. This deficiency is made up for in Queen et al.

29. Queen et al. (Patent # 6180370) teach a method for preparing humanized immunoglobulins for novel therapeutic agents. Queen et al. discloses pharmaceutical compositions comprising the humanized antibodies and effector molecules such as chemical agents, proteins, toxins or drugs conjugated to the antibody for diagnostic and therapeutic use, wherein the toxin conjugated to the antibody is absorbed (ie: internalized) by the cell promoting cell death (see columns 19 4th paragraph - column 20 2nd paragraph).

30. It would have been *prima facie* obvious to one of ordinary skill in the art at the time the claimed invention was made to humanize the antibodies taught by Bandman et

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al. and conjugate them to toxins. One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success by the teachings of Queen et al. because humanized antibodies conjugated to toxins help to specifically target and kill tumor cells in vivo and minimizes binding to normal non-specific cells.

Conclusion

31. Claims 1-3, 6, 8, 10, 16, 19, 20, 22 and 23 are rejected.

32. No Claim is allowed.

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meera Natarajan whose telephone number is 571-270-3058. The examiner can normally be reached on Monday-Thursday, 8:30AM-6:00PM, ALT. Friday. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on 571-272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

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Customer Service Representative or access to the automated information system, call
800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MN

~~LARRY R. HELMS, PH.D.~~

~~SUPERVISORY PATENT EXAMINER~~



LARRY R. HELMS, PH.D.
SUPERVISORY PATENT EXAMINER

WO 2005/046573

PCT/US2004/020741

4

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<211> 340
<212> PRT
<213> Homo sapiens

<400> 3

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20 25 30

Cys Gly Arg Arg Val Ile Thr Ser Arg Ile Val Gly Gly Glu Asp Ala
35 40 45

Glu Leu Gly Arg Trp Pro Trp Gln Gly Ser Leu Arg Leu Trp Asp Ser
50 55 60

His Val Cys Gly Val Ser Leu Leu Ser His Arg Trp Ala Leu Thr Ala
65 70 75 80

Ala His Cys Phe Glu Thr Tyr Ser Asp Leu Ser Asp Pro Ser Gly Trp
85 90 95

Met Val Gln Phe Gly Gln Leu Thr Ser Met Pro Ser Phe Trp Ser Leu
100 105 110

Gln Ala Tyr Tyr Thr Arg Tyr Phe Val Ser Asn Ile Tyr Leu Ser Pro
115 120 125

Arg Tyr Leu Gly Asn Ser Pro Tyr Asp Ile Ala Leu Val Lys Leu Ser
130 135 140

Ala Pro Val Thr Tyr Thr Lys His Ile Gln Pro Ile Cys Leu Gln Ala
145 150 155 160

Ser Thr Phe Glu Phe Glu Asn Arg Thr Asp Cys Trp Val Thr Gly Trp
165 170 175

Gly Tyr Ile Lys Glu Asp Glu Ala Leu Pro Ser Pro His Thr Leu Gln
180 185 190

Glu Val Gln Val Ala Ile Ile Asn Asn Ser Met Cys Asn His Leu Phe
195 200 205

Leu Lys Tyr Ser Phe Arg Lys Asp Ile Phe Gly Asp Met Val Cys Ala

5.

210

215

220

Gly Asn Ala Gln Gly Gly Lys Asp Ala Cys Phe Gly Asp Ser Gly Gly
 225 230 235 240

Pro Leu Ala Cys Asn Lys Asn Gly Leu Trp Tyr Gln Ile Gly Val Val
 245 250 255

Ser Trp Gly Val Gly Cys Gly Arg Pro Asn Arg Pro Gly Val Tyr Thr
 260 265 270

Asn Ile Ser His His Phe Glu Trp Ile Gln Lys Leu Met Ala Gln Ser
 275 280 285

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 290 295 300

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 1 5 10 15

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 20 25 30

Cys Gly Arg Arg Val Ile Thr Ser Arg Ile Val Gly Gly Glu Asp Ala
 35 40 45

Glu Leu Gly Arg Trp Pro Trp Gln Gly Ser Leu Arg Leu Trp Asp Ser
 50 55 60

His Val Cys Gly Val Ser Leu Leu Ser His Arg Trp Ala Leu Thr Ala
 65 70 75 80

-continued

140	145	150
Asn Met Lys Pro Leu Gln Leu Tyr Arg	Lys Gly Val Ile Lys Ala	
155	160	165
Thr Pro Thr Thr Cys Asp Pro Gln Leu	Val Asp His Ser Val Leu	
170	175	180
Leu Val Gly Phe Gly Ser Val Lys Ser	Glu Glu Gly Ile Trp Ala	
185	190	195
Glu Thr Val Ser Ser Gln Ser Gln Pro	Gln Pro Pro His Pro Thr	
200	205	210
Pro Tyr Trp Ile Leu Lys Asn Ser Trp	Gly Ala Gln Trp Gly Glu	
215	220	225
Lys Gly Tyr Phe Arg Leu His Arg Gly	Ser Asn Thr Cys Gly Ile	
230	235	240
Thr Lys Phe Pro Leu Thr Ala Arg Val	Gln Lys Pro Asp Met Lys	
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Pro Arg Val Ser Cys Pro Pro		
260		

(2) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 314 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(vii) IMMEDIATE SOURCE:

- (A) LIBRARY: PROSTUT03
- (B) CLONE: 789927

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35	40	45
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50	55	60
Leu Trp Asp Ser His Val Cys Gly Val Ser Leu Leu Ser His Arg		
65	70	75
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80	85	90
Ser Asp Pro Ser Gly Trp Met Val Gln Phe Gly Gln Leu Thr Ser		
95	100	105
Met Pro Ser Phe Trp Ser Leu Gln Ala Tyr Tyr Thr Arg Tyr Phe		
110	115	120
Val Ser Asn Ile Tyr Leu Ser Pro Arg Tyr Leu Gly Asn Ser Pro		
125	130	135
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140	145	150
Lys His Ile Gln Pro Ile Cys Leu Gln Ala Ser Thr Phe Glu Phe		
155	160	165
Glu Asn Arg Thr Asp Cys Trp Val Thr Gly Trp Gly Tyr Ile Lys		
170	175	180
Glu Asp Glu Ala Leu Pro Ser Pro His Thr Leu Gln Glu Val Gln		
185	190	195

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Tyr	Ser	Phe	Arg	Lys	Asp	Ile	Phe	Gly	Asp	Met	Val	Cys	Ala	Gly
				215					220					225
Asn	Ala	Gln	Gly	Gly	Lys	Asp	Ala	Cys	Phe	Gly	Asp	Ser	Gly	Gly
				230					235					240
Pro	Leu	Ala	Cys	Asn	Lys	Asn	Gly	Leu	Trp	Tyr	Gln	Ile	Gly	Val
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Val	Ser	Trp	Gly	Val	Gly	Cys	Gly	Arg	Pro	Asn	Arg	Pro	Gly	Val
				260					265					270
Tyr	Thr	Asn	Ile	Ser	His	His	Phe	Glu	Trp	Ile	Gln	Lys	Leu	Met
				275					280					285
Ala	Gln	Ser	Gly	Met	Ser	Gln	Pro	Asp	Pro	Ser	Trp	Pro	Leu	Leu
				290					295					300
Phe	Phe	Pro	Leu	Leu	Trp	Ala	Leu	Pro	Leu	Leu	Gly	Pro	Val	
				305					310					

(2) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 420 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(vii) IMMEDIATE SOURCE:

- (A) LIBRARY: LUNGAST01
- (B) CLONE: 877617

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4 :

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				20					25					30
Leu	His	Arg	Val	Gln	Pro	Gly	Arg	Arg	Thr	Leu	Asn	Leu	Leu	Arg
				35					40					45
Gly	Trp	Arg	Glu	Pro	Ala	Glu	Leu	Pro	Lys	Leu	Gly	Ala	Pro	Ser
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Pro	Gly	Asp	Lys	Pro	Ile	Phe	Val	Pro	Leu	Ser	Asn	Tyr	Arg	Asp
				65					70					75
Val	Gln	Tyr	Phe	Gly	Glu	Ile	Gly	Leu	Gly	Thr	Pro	Pro	Gln	Asn
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Phe	Thr	Val	Ala	Phe	Asp	Thr	Gly	Ser	Ser	Asn	Leu	Trp	Val	Pro
				95					100					105
Ser	Arg	Arg	Cys	His	Phe	Phe	Ser	Val	Pro	Cys	Trp	Leu	His	His
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Arg	Phe	Asp	Pro	Lys	Ala	Ser	Ser	Ser	Phe	Gln	Ala	Asn	Gly	Thr
				125					130					135
Lys	Phe	Ala	Ile	Gln	Tyr	Gly	Thr	Gly	Arg	Val	Asp	Gly	Ile	Leu
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Ser	Glu	Asp	Lys	Leu	Thr	Ile	Gly	Gly	Ile	Lys	Gly	Ala	Ser	Val
				155					160					165
Ile	Phe	Gly	Glu	Ala	Leu	Trp	Glu	Pro	Ser	Leu	Val	Phe	Ala	Phe
				170					175					180
Ala	His	Phe	Asp	Gly	Ile	Leu	Gly	Leu	Gly	Phe	Pro	Ile	Leu	Ser
				185					190					195